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Job No.: CECTC/BBMP/KRIDL/W.No.12/2015-16 06.04.2015

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager(West),** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements and Asphalting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.
Source / Location	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	06.04.2015

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2027	2024	2020	
2	Weight of basket suspended in water	W_2 g	752	752	752	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1275	1272	1268	
4	Weight of saturated surface dry aggregate in air	W_3 g	2011	2008	2010	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	736	736	742	
6	Weight of oven dried aggregate	W_4 g	2001	1995	1997	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.719	2.711	2.691	2.705
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.756	2.759	2.739	2.748
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.50%	0.65%	0.65%	0.58%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

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Job No.: CECTC/BBMP/KRIDL/W.No.12/2015-16 06.04.2015

Aggregate Gradation Test
IS : 2386 Part I

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager(West),** KRIDL, BBMP, Bangalore.
Name of the work	Improvements and Asphalting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.
Sample ID	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	06.04.2015

5230 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	430	8.22	8.22	91.78	90-100	
13.2	1810	34.61	42.83	57.17	56-88	
4.75	1620	30.98	73.80	26.20	16-36	
2.36	870	16.63	90.44	9.56	4-19	
0.3	158	3.02	93.46	6.54	2-10	
0.075	90	1.72	95.18	4.82	0-8	

Total Weight of Sample: **5050** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	389	7.70	7.70	92.30	90-100	
13.2	1598	31.64	39.35	60.65	56-88	
4.75	1685	33.37	72.71	27.29	16-36	
2.36	685	13.56	86.28	13.72	4-19	
0.3	360	7.13	93.41	6.59	2-10	
0.075	45	0.89	94.30	5.70	0-8	

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Job No.: CECTC/BBMP/KRIDL/W.No.12/2015-16 06.04.2015

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX
AASHTO T 164 & AASHTO T 30

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager(West),** KRIDL, BBMP, Bangalore.
NAME OF THE WORK	Improvements and Asphalting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.
SAMPLE I/D	supplied by the agency
DATE OF TESTING	06.04.2015

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	482.5	483
3. Weight of Asphalt and Mineral matter Extracted,	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	17.5	17.00
7. Bitumen content in %	3.50	3.40
8. Average	3.45	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Trail 1				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	37.5	7.77	7.77	92.23	90-100
13.2	158	32.75	40.52	59.48	56-88
4.75	144	29.84	70.36	29.64	16-36
2.36	62.8	13.02	83.38	16.62	4-19
0.3	35.8	7.42	90.80	9.20	2-10
0.075	21	4.35	95.15	4.85	0-8

SIEVE SIZE	Trail 2				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	28.7	5.74	5.74	94.26	90-100
13.2	136	27.20	32.94	67.06	56-88
4.75	169	33.80	66.74	33.26	16-36
2.36	84.5	16.90	83.64	16.36	4-19
0.3	38.5	7.70	91.34	8.66	2-10
0.075	16.8	3.36	94.70	5.30	0-8

AE-12

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Job No.: CECTC/BBMP/KRIDL/W.No.12/2015-16 06.04.2015

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager (West),** KRIDL, BBMP, Bangalore.
NAME OF THE WORK	:	Improvements and Asphalting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.
DATE OF TESTING	:	06.04.2015

The results of the tests conducted on the bitumen sample for Semi Dense Bituminous Concrete.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	87	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	52	Min. 45
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 50
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	280	Min. 220

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Job No.: CECTC/BBMP/KRIDL/W.No.12/2015-16 08.04.2015

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager(West),** KRIDL, BBMP, Bangalore.
Name of the Work	Improvements and Asphalting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	08.04.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	297	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.73	22.66	**22.19**

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Job No.: CECTC/BBMP/KRIDL/W.No.12/2015-16 08.04.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager(West),** KRIDL, BBMP, Bangalore.
Name of Work	Improvements and Asphalting to Kaivaranarayana swamy Temple road at Kammagondanahalli in Shettyhall Ward No.12, BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	08.04.2015

Result : Flakiness Index = **10.44%**

Elongation Index = **12.85%**

Result : Combined Flakiness & Elongation index **23.29%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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